



**Golden
Empire
Amateur
Radio
Society, Inc.**

www.gearsw6rhc.org

"Dedicated to Public Service"

THE RADIATOR



W6RHC
IRLP #8170

P.O.Box 202 Chico, CA 95927



December 2020 Newsletter

GEARS Founded August 13, 1939

2020 has certainly been a strange and challenging year for all of us.

At the December 18th meeting we will vote for next years GEARS officers. This meeting will be held online by Zoom. I'll email the link the day before the meeting. I know we all miss getting together face to face, however it's just not safe right now. Hopefully things can get back to normal sometime this spring.

Tom Rider W6JS is offering VEC testing at an outdoor location, call him for an appointment 514-9211.

We have multiple options for paying GEARS annual dues. You can choose the membership renewal level you prefer either \$20, \$30 or as a Century Member at \$100. It's your choice. For new members it's only \$10. You can also pay by paypal if you like.

At the last meeting we decided to hold a j-pole antenna building workshop in February or March. I'll let you know the dates.

December birthdays wishes to Bruce Hasek KF6DJY.

Take a tour of the KCBS transmitter site in the article below. The chief engineer is a high school friend of mine who spent his career in broadcasting.

Please try to participate in the local nets, while we can't meet in person, at least we can get together by radio.

GEARS wishes you and your family a very Merry Christmas and a Happy Healthy New Year.




'73
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Join GEARS on Facebook
www.facebook.com For timely
news and additional information.

December 2020 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 7:30pm GEARS Net	2	3 7pm PARS Net 7:30pm Simplex Net	4	5
6 8pm OARS Net VEC Testing Chico	7 7pm GARS Net 8pm ARES Net	8 7:30pm GEARS Net 7pm ARES meeting	9	10 7pm PARS Net 7:30pm Simplex Net	11 7pm GARS & OARS Meetings	12 GEARS Board Meeting online
13 8pm OARS Net	14 7pm GARS Net 8pm ARES Net	15 7:30pm GEARS Net	16	17 7pm PARS Net 7:30pm Simplex Net	18 7pm GEARS Meeting online	19
20 8pm OARS Net	21 7pm GARS Net 8pm ARES Net	22 7:30pm GEARS Net	23	24 7pm PARS Net 7:30pm Simplex Net	25 	26 9am OARS Breakfast
27 8pm OARS Net	28 7pm GARS Net 8pm ARES Net	29 7:30pm GEARS Net	30	31 7pm PARS Net 7:30pm Simplex Net		

VEC Testing, FCC License Exam available by appointment. For information or registration call Tom Rider, W6JS 514-9211

Chico Breakfast Canceled until things settle down with the COVID-19 virus.

GEARS Board Meeting 2nd Saturday online.

OARS Meeting Second Friday of the month, TBD (To Be Determined)

GARS Meeting Second Friday of the month, TBD

Butte ARES Meeting 3rd Tuesday, TBD Contact Dale Anderson, KK6EVX 826-3461 for more information.

GEARS Meeting, third Friday of the month, online till further notice pm, meeting at 7:00 pm.

OARS Breakfast 4th Saturday of the month TBD

NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net:Monday,7:00 pm 147.105 MHz + PL 110.09

Butte ARES Net Mondays 8pm 145.290 MHz - PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Thursday 7pm 145.290 - PL 110.9

Simplex Net Thursday 7:30 p.m. 146.52 no tone

Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

Mt. St. John

Our repeater on Mt. St. John is working well.

145.410 Mhz PL is 123.0 Negative offset.

PL both input and output (CTSS)

There are two live cameras at the summit, take a look:

<https://tinyurl.com/y5upu9xl>

<https://tinyurl.com/yxcfoqgr>



Take A Tour Of The KCBS Transmitter Site

KCBS Chief Engineer Dave Wigfield takes us on a tour of the transmitter site. He also provides a detailed technical description of how the solid state transmitter works. It's different than I would have thought. Dave also explains antenna phasing to give the signal a directional pattern.

The transmitter is a 50,000 watt Harris DX50. It was made in 1990 and has been in use for 20 years. The DX50 has been extremely reliable. This is due to the fact that it is entirely solid state. There are 128 individual power amplifier modules that are turned on and off digitally to make up the carrier wave. The highest voltage in the transmitter is the input AC voltage at 480 volts AC. The transmitter operates at about 230 volts DC with 230 to over 300 amps of current, depending on how loud the audio signal is at that moment (level of 'modulation'). Compare that to the previous Harris MW50 transmitter. It had a 25,000 volt power supply with 9200 volts at 6.9 amps on the plate of the tube.

The transmitter is connected to the phasor which takes the power from the selected transmitter and divides it up between the four towers. It also changes the phase of the four signals, meaning it alters the amount of time it takes for the power to reach a tower, and the combination of the power level and phase of the signal arriving at each tower directs the signal where we need it to go and lower the signal level in directions to protect other radio stations.

You can watch the video here: <https://youtu.be/R4YcA62SAPE>

David is now retired. He was previously chief engineer at KKHI AM & FM in San Francisco, and has also worked at KMPX, KTIM and KFAC. For more information, see his website <https://steampoweredradio.com>



There Are Four New Amateur Radio Operators on the ISS Space Station.

SpaceX Dragon capsule Resilience, carrying four radio amateurs, autonomously docked on November 17 at 0401 UTC with the International Space Station (ISS). A SpaceX Falcon 9 launcher carrying the precious payload went into space on Sunday, November 15, from NASA's Kennedy Space Center. They comprise the ISS Expedition 64/65 crew.

"Well, the ISS is loaded with hams now," Amateur Radio on the International Space Station (ARISS) US Delegate for ARRL Rosalie White, K1STO, said on Tuesday. "These four arrived very early this morning Eastern Time: NASA astronauts Victor Glover, KI5BKC; Mike Hopkins, KF5LJG, and Shannon Walker, KD5DXB, as well as Japan Aerospace Exploration Agency (JAXA) astronaut Soichi Noguchi, KD5TVP." This marks Glover's first time in space. The others all are ISS veterans.



Michael Hopkins **KF5LJG**

Shannon Walker **KD5DXB**

Soichi Noguchi **KD5TVP**

Victor Glover **KI5BKC**

Earlier this year, NASA ISS Ham Project Coordinator Kenneth Ransom, N5VHO, held amateur radio licensing study sessions for Glover, who passed the Technician exam on August 20.

The four will remain on station until next spring. They joined Expedition 64 Commander Sergey Ryzhikov and Flight Engineer Sergey Kud-Sverchkov of the Russian space agency Roscosmos, on the ISS.

White said all but Noguchi likely will take part in ARISS contacts with schools. White said the first school contact is tentatively scheduled for December 4 with Tecumseh High School in Oklahoma, home of the Tecumseh High School Amateur Radio Club, K5THS. She said the students have earned their ham licenses, and the club has built an antenna and is learning about satellites and circuits.

The Sunday launch from Kennedy Space Center marked only the second crewed-flight for the SpaceX Crew Dragon.
From ARRL

Five Ways Ham Radio Has Changed in the Last 40 Years

By Sean Kutzko, KX9X

I've been licensed for almost 40 years now. Hobby radio has been a part of my life, in one form or another, since I was three years old. In that time, it has morphed and changed in some very interesting ways, not all of which I was able to predict. Not all change is progress, though. I've definitely seen some stuff that I don't find particularly positive about the way Ham radio has evolved.

Here are five major ways I feel Ham radio has changed since I earned my Novice license back in May of 1982. Please note, my opinions are my own and I speak for nobody but myself.

1. SWLing Isn't as Much Fun Anymore

While not strictly Ham radio, many Hams my age got started in the hobby through shortwave radio listening, or SWLing. I started off with a Radio Shack Globe Patrol shortwave kit, which my brother built and gave to me. I then wrapped about a mile of copper wire around my



bedroom for an antenna and rarely took my headphones off after that. Signals from all around the world came into that little box: The BBC, Radio Moscow, Radio Beijing, Radio Australia, HCJB in Ecuador (see below), and so many others. I had a solid grasp on world geography by the time I was seven, thanks to shortwave radio.

These days all the big stations are gone, thanks to the Internet. It's more economically feasible to stream your programming online than to maintain several 500 kW broadcast facilities around the world. Yes, there's still stuff to listen to on shortwave, but most of it is religious broadcasts and China Radio International. I still tune in from time to time just to see what's on the air these days, but the radio spectrum has definitely shifted, and streaming the BBC online just doesn't scratch the radio itch like shortwave did.

AM band DXing is still fun, especially on my 1938 Zenith console radio, as is NDB (Non-Directional Beacon) DXing on the VLF bands.

Before I earned my Novice license, I was an avid shortwave listener (SWL). HCJB out of Ecuador was a powerhouse shortwave broadcaster, and I enjoyed collecting QSL cards (above) from many stations worldwide. SWLing has changed considerably since then.

2. No CW Requirement

I recall sitting next to a grad student as I passed my five-word-per-minute Morse code exam in a classroom at the University of Illinois Electrical Engineering building, near the university's Synton Amateur Radio Club, W9YH. I was 13 years old and earned my Novice license as a result. When my license finally (FINALLY!) arrived in the mail after almost THREE MONTHS, CW was the only way I could get on the air. So I went down to the 15 and 40 meter Novice sub-bands and learned how to send very slow CW on a straight key. Over time, what I initially viewed as a necessary evil to get on the air soon proved to be the most enjoyable way I participated in Ham radio. CW is my favorite mode by far...but it took some time to get there.

Of course, there is no CW requirement to earn a license anymore, nor should there be. However, it remains as popular as ever among Hams. It's not just the old-timers who like it, either. Thanks to several clubs that promote learning CW, like CWops and the Straight Key Century Club, Morse will be utilized for quite some time.

3. The Digital Revolution

Living in Urbana, Illinois had definite advantages. A few months after I got licensed, I attended a local club

meeting where there was a presentation on RTTY by Bill Henry, K9GWT (sk), the owner of HAL Communications Corporation. For those who don't remember, HAL was the leader in dedicated RTTY terminals and demodulators in the late 70s and early 80s. I was as wide-eyed as a Novice could be, and in a singular act of kindness, Bill actually let me borrow a complete RTTY station for a couple of weeks to tune around and explore this new-to-me mode of Ham radio. Of course, the \$2,100 price tag (in early 1983) was far beyond what a 14-year-old could afford. I returned the gear back to HAL and was intrigued by being able to type to far-away people via Ham radio.

The computer revolution hit shortly thereafter, and the entire landscape changed. Computer logging, contest submissions via the Internet, and the myriad ways Ham radio combined with computers was exciting and incredibly innovative. With Joe Taylor's, K1JT innovation of the WSJT suite of software, VHF and moonbounce operations were revolutionized, though not everybody was happy about it. Then a couple years later, FT8 hit the scene and things changed yet again.

I appreciate the innovation and am glad that thousands of operators enjoy using the digital modes, but I am disheartened about the effect FT8 has had on VHF operating, especially on 6 meters. Milking the band of contacts during weak propagation enhancement is certainly an achievement, but it comes at the loss of being able to work a lot of stations on SSB and CW during stronger openings. Fewer people use those modes now, even during great conditions. And that is a negative I wish I could change.

4. The Role of Ham Radio in Emergency Communications

Ham radio's role in traffic handling and dealing with bona-fide emergencies was incredibly strong well into the 2000s. Hurricane Katrina remains the modern prime example where Ham radio truly provided life-saving communications under incredibly difficult and harsh circumstances. But after the Internet really took hold and the infrastructure was developed and improved dramatically, Ham radio's role as an emergency resource decreased significantly. Yes, it still serves in that capacity—see SKYWARN for a prime example of this. But barring a major cataclysmic event, the glory days of Ham radio and emergency communications in the United States are fading fast.



5. It's More Popular Than Ever

There are almost 750,000 licensees in the U.S., and a lot of them are fascinated with new technology and experimentation, the entire point of Ham radio! Space communications, software-defined radio, building and hacking devices, learning electronics and propagation: Learning new techniques and tools to communicate is what Ham radio is all about. It's also why Ham radio is a perfect conduit to electronics, coding, physics, weather, and a host of other disciplines via STEM education (science, technology, engineering, mathematics) and personal development.

I couldn't be happier about the state of Ham radio today. It remains a huge part of my life and that of many others, and I don't see it going away anytime soon. However, it will continue to change and evolve, as is the nature of all things. Whether you choose to stay comfortable in a hobby you know and love or branch out and discover new aspects of it, I hope you keep enjoying Ham radio and marvel at how it keeps reinventing itself, just as it has ever since it came to be.

From OnAllBands.com

Antennas for HOA Restricted Residences

By Mark Haverstock, K8MSH

We hear the question a lot: What are good antenna recommendations for use at my HOA restricted residence?

Even if you live in a neighborhood that has an HOA, you can have antennas that are very stealthy and usable for anything from local UHF/VHF contacts to working DX on HF. Are these antenna options as good as a giant tower with a beam? No, but they'll get you on the air and work reasonably well.

Stealth and Camouflage

The HOA's main concern about antennas is their visibility. Are they too tall? Do they stand out? In their eyes, antennas are the wrong color, visually distracting, and may disturb the ambiance of the neighborhood. If they can be seen from the street, they're usually not allowed.

For VHF or UHF antennas, the solution is fairly simple. Since these antennas are short, they can be mounted at the back of the house where they cannot be seen from the street. A Comet GP-1 base antenna, at just over 4 feet high, can be easily placed on the back side of a roof and give you good 2m/70cm coverage. If you have a satellite dish, clamp a J-pole or MFJ 1754 to the dish mounting pole or bracket. Most will assume it's for TV reception. The attic is also a good location to hide an antenna. A roll up j-pole can be hung from the center beam, or a mobile mag-mount placed on a cookie sheet can be used. These types of antennas can also be located on a porch or a patio.



Do you have some mature trees in the right locations? A wire can be used to make a dipole, inverted L, or end-fed antenna that will be virtually invisible to anyone on the street. Usually, the biggest problem is hiding the feed line to the antenna. If the feed line drops down the tree trunk, it can be painted to match the bark color and buried until it reaches the house. No trees? Run it across/around the roof or on top of a wooden fence.

Some good candidates for long wires include the Par EndFedz antennas. Choose from single-band models or a multiband, like the EF-Quad. The Buckmaster line of wire antennas provides high performance with "plug-and-play" simplicity.

Hide in Plain Sight

One of my favorites is the vertical flagpole antenna. HOAs will generally tolerate Old Glory or the flag of a local sports team, but they may impose some height restrictions. The classic Hustler BTV series verticals are an especially good choice. A 4BTV will fit nicely into 21.5 feet of thin wall PVC pipe and give you four-band operation. BTV antennas can also be camouflaged with paint and installed among trees. Here are some instructions for construction.

Another flagpole option is to run 12 or 14 gauge wire through the inside of the PVC and tune it using a remote tuner such as the Icom AH-4. To tune 80 meters, you'll need 23 or more feet of wire. If you want to run more than 120 watts, check out the LDG RT-600. The tuner is placed at the base of the antenna, and can be hidden with shrubs or a fake plastic rock.

A screwdriver antenna, often used for mobile installations, can make a stealthy antenna planted in a rock garden or among shrubs. It can be tuned remotely for multiple band coverage. Mount it to a pipe driven into the ground and use the tallest radiator you can.

Remember that all vertical antennas work best with radials. At best, a single ground rod provides mediocre results. A dozen or so radials should work well, and they can be secured to the lawn with landscape staples. Give them several weeks and they'll disappear into the turf.

They Only Come Out at Night

Outdoor antennas are always preferable, but some may be too large and easily seen—especially those for the lower bands. Many Hams in HOAs choose antennas that can be easily set up for night operation and taken down in the morning.

TW antennas are complete portable antenna packages that include all of the individual components to build a custom

stealthy system. They have both multiband and single band models that are approximately 8 by 5 feet and are easy to set up and take down.

The mini dipole such as a Buddipole combines two single band stick antennas into a rotating dipole that can be supported by a pole on a sturdy tripod. Typical wingspan is about 14 feet and it's fairly light. Elements can be switched out for different bands.

Raising and lowering a standard-sized vertical antenna for night use can be a solution for working 80, 60, 40, or 30 meters. With the help of a tilt mount, they can be in the air or back on the ground in a matter of minutes. A few words of caution: Don't add a mast between the tilt mount and the antenna—it will make the antenna unstable. Good candidates for a vertical include: Hustler 6BTV, Butternut HF6V, Cushcraft MA8040V, and Hy-Gain AV-14AVQ. Of course, add radials for best performance.

Hitch a Ride on a Satellite

Great fun can be had by doing satellite work using a hand held arrow type antenna. Just go to your yard or driveway and use the portable antenna and a handheld radio to make contacts in the U.S. and even work DX. Nothing has to be permanently mounted, although you could do that in an attic or as a non-descript egg beater antenna outside.

Last Resorts

If all else fails, there is nothing in any HOA rule book that restricts what you can install on your automobile or boat. A quick disconnect fitting or two will allow you to connect the HF antenna mounted on your car to a run of coax going inside the house to your radio room. It's not the perfect solution, but it works.

From OnAllBands.com

Shortwave Listening with your HF Transceiver

At our last meeting we watched a video presentation about Shortwave listening using your HF Transceiver. The video is here: <https://youtu.be/IB47VAjRaiE>

You can search for stations here: <https://shortwaveschedule.com/>

For more information see: https://en.wikipedia.org/wiki/Shortwave_bands

Our GEARS November meeting is also available to watch here: https://youtu.be/VKC0_Vglsok

Club Officers:

President.....	Jim Matthews, K6EST
Vice-President.....	Kent Hastings, WA6ZFY
Secretary.....	Susan Check, KE6LTY
Treasurer.....	Kathy Favor, K6FAV
Director.....	Dale Anderson, KK6EVX
Director.....	Bennett Laskey, K6CEL
Past President.....	Tom Rider, W6JS
VEC.....	Tom Rider, W6JS

We will vote on new officers in the December meeting.

